

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/056877 A1

(51) International Patent Classification⁷: **C08B 37/00**,
A61K 31/728⁶

(21) International Application Number:
PCT/EP2003/014732

(22) International Filing Date:
22 December 2003 (22.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
MI2002A002745
23 December 2002 (23.12.2002) IT

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): SINTO-FARM S.P.A. [IT/IT]; Via Togliatti 5, I-42016 Guastalla (IT).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): PERBELLINI, Alberto [IT/IT]; Via IV Novembre, 14, I-37126 Verona (IT). CORADINI, Danila [IT/IT]; Via Pecorini, 7, I-20138 Milano (IT).

(74) Agent: GERVASI, Gemma; Notarbartolo & Gervasi S.p.A., Corso di Porta Vittoria, 9, I-20122 Milan (IT).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MIXED ESTERS OF HYALURONIC ACID WITH RETINOIC AND BUTYRIC ACIDS

(57) Abstract: The present invention relates to mixed esters of hyaluronic acid, wherein the hydroxyl groups are partially esterified with retinoic and butyric acids. These mixed esters are characterized by specific degrees of esterification and by a high ratio between the degree of substitution with butyric acid and retinoic acid. They exhibit a high anti-proliferative activity associated with activation of cell differentiation, with consequent clinical relevance in the treatment of hyper-proliferative pathologies and in particular of solid and systemic tumors.

WO 2004/056877 A1